App. No. 10/809,215
Office Action Dated August 23, 2006

Amendments to the Claims:

This listing of claims will replace all prior versions and listing of claims in the application.

Claims 2, 3, 8, and 9 are amended. Claims 10-13 are canceled without prejudice or disclaimer.

Listing of Claims:

1. (Canceled)

2. (Currently Amended) A solid-state imaging apparatus, comprising:

a plurality of photosensitive cells disposed in a matrix in a photosensitive region on a semiconductor substrate; and

a driving unit for driving the plurality of photosensitive cells,

wherein each of the photosensitive cells includes:

a photodiode formed to be exposed on a surface of the semiconductor substrate, for accumulating signal charge obtained by subjecting incident light to photoelectric exchange;

a transfer transistor formed on the semiconductor substrate, for transferring the signal charge accumulated in the photodiode;

a floating diffusion layer formed on the semiconductor substrate, for temporarily accumulating the signal charge transferred by the transfer transistor, the floating diffusion layer including a contact portion that is connected to a gate electrode of an amplifier transistor; and

the amplifier transistor being formed on the semiconductor substrate, for amplifying the signal charge temporarily accumulated in the floating diffusion layer,

wherein a source/drain diffusion layer provided in the amplifier transistor is covered with a salicide layer,

the floating diffusion layer is formed to be exposed on the surface of the semiconductor substrate in a region other than a periphery of the contact portion of the floating diffusion layer, while a region within the periphery of the contact portion is covered with a second salicide layer, and

an impurity concentration of the floating diffusion layer is lower than an impurity concentration of the source/drain diffusion layer of the amplifier transistor.

3. (Currently Amended) A solid-state imaging apparatus, comprising:

a plurality of photosensitive cells disposed in a matrix in a photosensitive region on a semiconductor substrate; and

a driving unit for driving the plurality of photosensitive cells,

wherein each of the photosensitive cells includes:

a photodiode formed to be exposed on a surface of the semiconductor substrate, for accumulating signal charge obtained by subjecting incident light to photoelectric exchange;

a transfer transistor formed on the semiconductor substrate, for transferring the signal charge accumulated in the photodiode;

a floating diffusion layer formed on the semiconductor substrate, for temporarily accumulating the signal charge transferred by the transfer transistor, the floating diffusion layer including a contact portion that is connected to a gate electrode of an amplifier transistor; and

the amplifier transistor being formed on the semiconductor substrate, for amplifying the signal charge temporarily accumulated in the floating diffusion layer,

wherein a source/drain diffusion layer provided in the amplifier transistor is covered with a salicide layer,

the floating diffusion layer is formed to be exposed on the surface of the semiconductor substrate in a region other than a periphery of the contact portion of the floating diffusion layer, while a region within the periphery of the contact portion is covered with a second salicide layer,

each of the photosensitive cells further includes a reset transistor for resetting the floating diffusion layer,

the driving unit includes:

a vertical driver circuit for simultaneously driving the transfer transistor and the reset transistor in a vertical direction;

a noise suppressing circuit for obtaining a signal output to a plurality of vertical signal lines disposed in a vertical direction in the photosensitive region; and

a horizontal driver circuit for outputting a signal from the noise suppressing circuit in a time series by successively switching a plurality of horizontal transistors disposed in a horizontal direction, and

an impurity concentration of the floating diffusion layer is lower than an impurity concentration of a source/drain diffusion layer provided in a plurality of transistors constituting the vertical driver circuit and the horizontal driver circuit.

4. (Original) The solid-state imaging apparatus according to claim 3, wherein the source/drain diffusion layer provided in the plurality of transistors constituting the vertical driver circuit and the horizontal driver circuit is covered with a salicide layer.

5. (Previously Presented) The solid-state imaging apparatus according to claim 2, wherein the transfer transistor and the amplifier transistor are composed of an n-type MOS transistor.

6. (Original) The solid-state imaging apparatus according to claim 3, wherein the vertical driver circuit and the horizontal driver circuit are composed of a dynamic logic circuit.

7. (Original) The solid-state imaging apparatus according to claim 3, wherein an impurity concentration of a source/drain diffusion layer of a part of the plurality of transistors constituting the vertical driver circuit and the horizontal driver circuit is lower than an impurity concentration of a source/drain diffusion layer of another part of the plurality of transistors constituting the vertical driver circuit and the horizontal driver circuit.

8. (Currently Amended) The solid-state imaging apparatus according to claim 3, wherein a source/drain diffusion layer of a part of the plurality of transistors constituting the vertical driver circuit and the horizontal driver circuit is formed to be exposed on [[a]] the surface of the semiconductor substrate, and a source/drain diffusion layer of another part of the plurality of transistors constituting the vertical driver circuit and the horizontal driver circuit is covered with a salicide layer.

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9. (Currently Amended) The solid-state imaging apparatus according to claim 2, wherein [[an]] the impurity concentration of the floating diffusion layer is 1×10^{18} cm^{-3} or less.

10. – 13. (Canceled)